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Two new species of *Bactrodesmium* and *Dictyoaquaphila* from Mexico

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Abstract—*Bactrodesmium simile* sp. nov. and *Dictyoaquaphila unisetulata* sp. nov., collected on decaying plant material, are described and illustrated. *Bactrodesmium simile* is distinguished by broadly pyriform, obovoid to globose or somewhat turbinate, 1-septate, golden brown conidia. *Dictyoaquaphila unisetulata* is characterized by ellipsoidal or subglobose, pale gray-brown or pale olivaceous brown separating cells and solitary acrogenous, fusiform, broad fusiform or navicular, dictyoseptate, dark brown conidia, with a cellular, filiform, hyaline apical appendage.

Key words—asexual fungi, systematics, tropical fungi

Introduction

Saprobic dematiaceous hyphomycetes are highly diverse on plant material in tropical forests, where many new genera and species have recently been discovered (e.g., Castañeda-Ruiz et al. 2009, 2012; Heredia et al. 2013, 2014; Zhang et al. 2009, 2011). During a mycological survey of fungi associated with decaying plant materials in a Mexican cloud forest, two interesting dematiaceous hyphomycetes were collected and showed remarkable differences from all previously described *Bactrodesmium* and *Dictyoaquaphila* species. These two fungi are therefore described here as new to science.

Materials & methods

Samples of litter were placed in paper and plastic bags, taken to the laboratory, and prepared according to Castañeda-Ruiz (2005). Mounts were prepared in PVL (polyvinyl alcohol and lactic acid) and measurements were made at a magnification of ×1000. Micrographs were obtained with a Nikon Eclipse 80i microscope equipped with bright field and Nomarski interference optics. The type specimens are deposited in the Herbarium of Instituto de Ecología A.C., Xalapa, Veracruz, Mexico (XAL).

Taxonomy

Bactrodesmium simile R.M. Arias, Heredia & R.F. Castañeda, **sp. nov.** Fig. 1a, b

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Differs from *Bactrodesmium novae-geronense* by its bigger conidia.

Type: Mexico, Veracruz State, Xalapa city, Parque Francisco Javier Clavijero, 19°30′N ″96°56′W, on decaying twigs, 12 September 2011, coll. R.M. Arias (**Holotype**, XAL CB1689).

Etymology: Latin, *simile*, referring to its similarity to *Bactrodesmium novae-geronense*.

Conidiomata on the natural substrate, sporodochial, scattered, pulvinate or punctiform, golden olivaceous-brown. Mycelium superficial and immersed composed of septate, branched, subhyaline to very pale brown, smooth hyphae, 1–3.5 µm diam hyphae. Conidiophores undifferentiated, mostly reduced to conidiogenous cells. Conidiogenous cells monoblastic, integrated or discrete, determinate, cylindrical, straight or prostrate, very pale brown, 12.5–29 × 2–5 µm. Conidial secession rhexolytic. Conidia solitary, acrogenous, broadly pyriform, obovoid to globose or somewhat turbinate, 1-septate, smooth, golden brown to pale olivaceous-brown, 19–24 × 12–16 µm, asymmetrical, with a cuneiform, 7.5–11 × 5–8.5 µm basal cell, and a hemispherical, 12–16 ×12–16 µm apical cell, with markedly guttulate, dark cell lumina.

Additional specimen examined: **MEXICO**, **Veracruz State**, **Acatlán**, Volcán de Acatlán, 19°40′N 96°51′W, on decaying twigs, 28 September 2011, coll. R.M. Arias (XAL CB1690).

Note: Forty-four species have been accepted in *Bactrodesmium* (Hernández-Restrepo et al. 2013); only *B. novae-geronense* R.F. Castañeda is similar to *B. simile*, from which it differs by its smaller conidia (8–13 × 7–10 µm Castañeda-Ruiz, 1985).

Dictyoaquaphila unisetulata R.M. Arias, Heredia & R.F. Castañeda, **sp. nov.**

MycoBank MB 808327 Fig. 1c–e

Differs from *Dictyoaquaphila appendiculata* by its broad fusiform to navicular conidia, with a smaller cellular, filiform apical appendage.

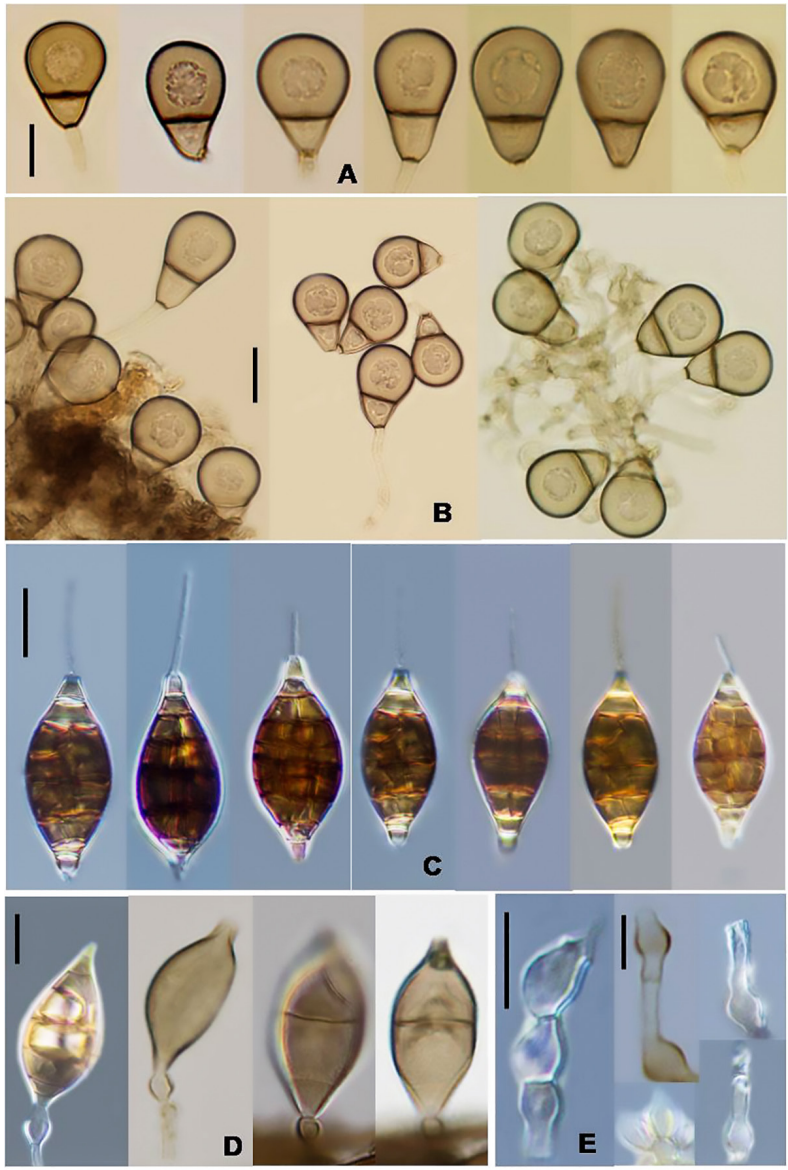

Fig. 1. ***Bactrodesmium simile*** (ex holotype, XAL CB1689, XAL CB1690): A. conidia; B. conidiogenous cell and conidia. ***Dictyoaquaphila unisetulata*** (ex holotype, XAL CB1688): C. conidia; D. separating cells and conidia; E. conidiophores, conidiogenous cells, and separating cell. Scale bars: A, C–E = 10 µm; B = 15 µm.

Type: Mexico, Veracruz State, Soteapan city, Volcano Santa Marta, 18°20′N 94°53′W, on rotten wood, 6 August 2011, coll. G. Heredia (**Holotype**, XAL CB1688).

Etymology: Latin, *uni-*, meaning one, + *-setulata*, referring to the apical appendage.

Colonies on the natural substrate effuse, granulose, dark brown to black. Mycelium immersed, composed of septate, slightly branched, pale brown, smooth, hyphae, 1–2 µm diam. Conidiophores distinct, single, erect or prostrate, straight or slightly sinuate, 1–2-septate, pale brown, smooth, 15–30 × 3–5 µm, occasionally reduced to conidiogenous cells. Conidiogenous cells mono- and polyblastic, cylindrical, sometimes inflated, integrated or discrete, determinate, smooth, brown to pale brown, 4–7 × 2–4 µm. Separating cells ellipsoidal or subglobose, pale gray-brown or pale olivaceous-brown, smooth, 6–8 × 3–5 µm. Conidial secession schizolytic. Conidia solitary, acrogenous, dictyoseptate, euseptate, broad fusiform, navicular, subcylindrical-truncate basal cell and obtuse or rounded apical cell, 26–30 × 12.5–16 µm, variegated, dark brown at the middle cells, brown to pale brown near the end cells and subhyaline or pale brown at the end cells, smooth, with a cellular, filiform, hyaline, apical appendage, 6–19 µm long.

Note: Monteiro et al. (2016) established the genus *Dictyoaquaphila* typified by *D. appendiculata* Monteiro et al. The genus is characterized by mono- and polyblastic, cylindrical, integrated or discrete, terminal, determinate or sympodial elongated conidiogenous cells, with swollen, fusiform, ellipsoidal or shortly clavate, brown or dark brown separating cells. The conidia are solitary, acrogenous, euseptate, dictyoseptate, fusiform to obclavate, brown to dark brown and paler at the ends, with several divergent, filiform or narrow cylindrical, hyaline appendages at the ends. *Dictyoaquaphila appendiculata* differs from *D. unisetulata* by its conidia being broad ellipsoid-fusiform to prolate subglobose, 37–45 × 17–27 µm, with 0–3 divergent, filiform or narrow cylindrical, hyaline apical appendages, 20–42 × 1–1.5 µm and sometimes 0–2 (–3) divergent, filiform or narrow cylindrical, hyaline basal appendages, 20–35 × 1–1.5 µm (Monteiro et al. 2016).

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